

TWO LARGE OPHIODERMATID BRITTLESTARS
NEW TO FLORIDA¹

LOWELL P. THOMAS
University of Miami

Ophioderma, Family Ophiodermatidae, is a tropical genus whose species are, with several questionable exceptions, absent from the Indo-West Pacific region. Ziesenhenné (1955) listed twenty-one species of which twelve are found in the western Atlantic. The following species have been recorded from shallow (ten meters or less) Florida waters: *Ophioderma brevispinum* (Say), *O. brevicaudum* Lütken, *O. appressum* (Say), *O. cinereum* Müller and Troschel, and *O. rubicundum* Lütken. The last two species, particularly *O. rubicundum*, are most common in coral reef environments, whereas *O. brevispinum* is exceedingly common in beds of turtle grass (*Thalassia testudinum*). *O. appressum* may be found in a variety of habitats including clumps of the alga *Halimeda* and under the rubble of coral reefs. Although Verrill (1899) reported *O. brevicaudum* from the Florida Keys, I have never taken it from Florida waters.

The upper arm plates of *Ophioderma cinereum* are broken into numerous irregular segments (Fig. 1), a characteristic which is also found in the two species new to Florida (*O. guttatum* Lütken and *O. squamosissimum* Lütken). As these species are the only ones in the western Atlantic with this feature its possible significance is discussed below.

Ophioderma guttatum Lütken, 1859

Material Examined: 1 spec. disc diameter 33 mm., Soldier Key, Biscayne Bay Florida, 17 July, 1950, G. L. Voss, Coll. UMML 41.59.

1 spec. disc diameter 37 mm., Bear Cut, Key Biscayne, Florida, depth, 4 feet, 12 July, 1959. L. P. Thomas, Coll. UMML 41.142.

1 spec. disc diameter 45 mm. Margate Fish Shoal, S. of Elliot's Key, Miami, Florida, depth, 10 feet, 20 June, 1961. Marine Laboratory staff, Coll. UMML 41.143.

1 spec. disc diameter 32 mm. ½ mile S.S.W. of Alligator Reef Light,

¹ Contribution No. 378 from The Marine Laboratory, University of Miami. This work was supported by a grant from the National Geographic Society.

Monroe County, Florida, depth 15-20 feet, 30 April, 1961. W. A. Starck II, Coll. UMML 41.153.

Ophioderma guttatum Lütken was described (1859) from a single specimen collected at St. Thomas in the Virgin Islands. Only two other records of this large brittlestar exist. H. L. Clark (1915) reported two specimens from Port Antonio and Montego Bay, Jamaica, and mentioned (1918) its presence at Tobago, B.W.I. Within the past several years four specimens of this species have been collected in and near Biscayne Bay. All have been taken under rubble associated with hermatypic corals. A more common species, *O. cinereum*, may be found in the same environment.

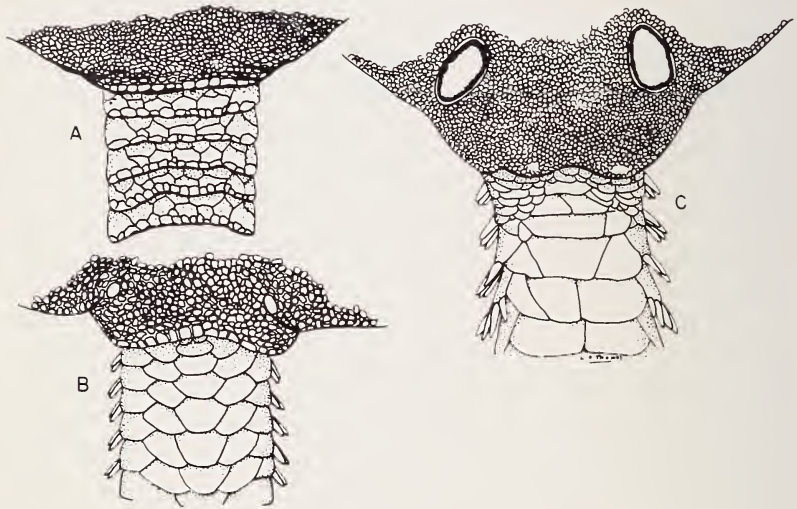


Figure 1. A. *Ophioderma guttatum*, B. *O. squamosissimum*, C. *O. cinereum*. Basal portion of an arm with adjoining section of the disc.

O. guttatum is one of the larger West Indian brittlestars. Although Lütken's description was based on a specimen with only a 12 mm. disc diameter, Clark (1933) gave a disc diameter for full grown specimens of nearly 30 mm. The disc diameters of the specimens in The Marine Laboratory collection measure 32, 33, 37 and 45 mm. The arm length of the largest one is 183 mm.

Because of its large size and similar brownish color, *O. guttatum* may be confused with *O. cinereum*. Both also have the upper arm plates broken into irregular smaller plates. *O. cinereum*,

however, has banded arms, round disc granules, and naked radial shields. *O. guttatum* has unbanded arms, finely peppered with dark spots and flattened disc granules which are irregular in shape and cover the radial shields.

Ophioderma squamosissimum Lütken, 1859

Material Examined: 1 spec. disc diameter 38 mm, ¼ mile SSE of Alligator Light, Florida Keys, depth 15 feet, 26 Aug. 1961. W. A. Starck II, Coll. UMML 41.144.

1 spec. disc diameter 42 mm, Margate Fish Shoal, S. of Elliot's Key, Miami, Florida, depth 10 feet, 20 June, 1961. Marine Laboratory Staff, Coll. UMML 41.145.

5 spec. disc diameters 17-22 mm, Buccoo Bay, Tobago, B.W.I., MCZ. 4170.

1 spec. North Bimini, Bahamas, Richard Foster, Coll. MCZ 6652.

A second species new to Florida waters, *Ophioderma squamosissimum* Lütken, 1859, has been collected in less than five meters of water at two separate south Florida locations. The original description was based on a single specimen from an unknown West Indian locality. Fifty-nine years later H. L. Clark (1918) described and figured this species from five specimens which he collected in Buccoo Bay at Tobago, British West Indies. "These were all found (but only by long and intensive searching) on the least exposed parts of Buccoo Reef" (Clark, 1918). Richard Foster of the Museum of Comparative Zoology at Harvard collected a seventh specimen (MCZ 6652) at North Bimini, Bahamas. Dr. Clark was interested in the apparent wide distribution of this little known species but was unable to publish upon it before his death in 1947.

O. squamosissimum is another giant among ophiodermatids. Formerly the largest specimen was the type which has a disc diameter of 28 mm and arms 158 mm long. The two Florida specimens have disc diameters of 42 and 38 mm and arms 155 and 200 mm long, respectively. Both were regenerating arms which explains the one with the largest disc having the smallest arms.

There is little question of confusing this *Ophioderma*, which Clark (1933) considered the most brilliantly colored animal on West Indian Reefs, with its congeners. The color is a bright vermilion which unfortunately fades rapidly upon the death and preservation of the specimen. Clark (1918) found the discs of his specimens lightly marked with a yellowish shade. Similarly the un-

der arm surfaces of the Florida specimens were yellowish. The writer has seen all extant specimens, except the type, and in no case is there any trace of banding or spotting. The very small radial shields are naked and the disc granules are extremely flattened and irregular in outline so that they form a mosaic. The arm plates are broken into smaller plates just as they are in *O. cinereum* and *O. guttatum*. Instead of being irregular they form a very regular series of scales with a central dorsal row and two or three lateral rows on each side.

Possibly, *O. guttatum* and *O. squamosissimum* are closely related for both possess flattened irregular disc granules which, to the writer's knowledge, do not occur in other members of the genus. Clark (1918) suggested that the two should probably be placed in a separate genus. The phylogenetic significance of the presently used taxonomic characters in ophiuroids is unknown. A great deal more work remains to be done with the problem of brittlestar speciation before morphologic similarities can be equated with phylogenetic relationships. If indeed similarities in disc granules show phylogenetic relationship, *O. cinereum*, which has round disc granules, would appear to be more closely allied to the remaining group of ophiodermas. It is particularly similar to *Ophioderma teres* of the Pacific coast of Mexico and Central America. This species has irregularly broken upper arm plates, similar oral plates, and may be spotted with light yellow, just as the young of *O. cinereum*. Whether or not a close phylogenetic relationship exists between these species is unknown.

I wish to thank Walter A. Starck, II and Clyde F. E. Roper of The Marine Laboratory for their assistance in obtaining observations and specimens. The specimens at the Museum of Comparative Zoology at Harvard were examined while I was working under National Science Foundation Grant (G-5183). I am grateful to Dr. Elisabeth Deichmann for her many kindnesses during my stay there.

LITERATURE CITED

CLARK, H. L.

- 1915. Catalogue of recent Ophiurans based on the collections of the Museum of Comparative Zoology. Mem. Mus. comp. Zool. Harv. 25(4): 163-376, pls. 1-20.
- 1918. Brittle stars, new and old. Bull. Mus. comp. Zool. Harv. 62(6): 265-338, pls. 1-8.

1933. A handbook of the littoral echinoderms of Puerto Rico and other West Indian Islands. Sci. Surv. P.R. 16(1): 1-147, pls. 1-7.

LÜTKEN, C. F.

1859. Additamenta ad historiam Ophiuridarum, Anden Afdeling. K. danske. vidensk. Selsk., Afd. 5: 179-271, pls. 1-5.

VERRILL, A. E.

1899. Report on the ophiuroidea collected by the Bahama expedition in 1893. Bull. Labs. nat. Hist. Univ. Ia. 5(1): 1-86.

ZIESENHENNE, F. C.

1955. A review of the genus *Ophioderma* M. & T. In Essays in the natural sciences in honor of Captain Allan Hancock. :185-201. University of Southern California Press.